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UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/750,423	12/30/2003	David Qiang Meng	10559-914001 / P16854	4620

20985 7590 06/27/2006	EXAMINER	
FISH & RICHARDSON, PC	RUTZ, JARED IAN	
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MINNEAPOLIS, MN 55440-1022	2187	

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Please find below and/or attached an Office communication concerning this application or proceeding.

PTO-90C (Rev. 10/03)

	Application No.	Applicant(s)
Office Action Summary	10/750,423	MENG, DAVID QIANG
	Examiner	Art Unit
	Jared I. Rutz	2187

-- *The MAILING DATE of this communication appears on the cover sheet with the correspondence address* --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on <u>30 December 2003</u>.

2a)☐ This action is **FINAL**.   2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) <u>1-26</u> is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) <u>1-26</u> is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on <u>12 December 2005</u> is/are: a)☒ accepted or b)☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☐ All   b)☐ Some * c)☐ None of:

        1.☐ Certified copies of the priority documents have been received.

        2.☐ Certified copies of the priority documents have been received in Application No. _____.

        3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1)☐ Notice of References Cited (PTO-892)

2)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3)☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
    Paper No(s)/Mail Date _____.

4)☐ Interview Summary (PTO-413)
    Paper No(s)/Mail Date. _____.

5)☐ Notice of Informal Patent Application (PTO-152)

6)☐ Other: _____.

DETAILED ACTION

1.   Claims 1-26 as originally filed are pending in the instant application. Of these,

there are 6 independent claims and 20 dependent claims.

Drawings

2.   The drawings were received on 12/12/2005. These drawings are accepted by

the Examiner.

Claim Rejections - 35 USC § 112

3.   The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

4.   **Claims 1-26** are rejected under 35 U.S.C. 112, first paragraph, as failing to

comply with the enablement requirement. The claim(s) contains subject matter which

was not described in the specification in such a way as to enable one skilled in the art to

which it pertains, or with which it is most nearly connected, to make and/or use the

invention.

5.   **Claim 1** recites the limitation "*partitioning a memory device to produce a first*

group of memory entries being accessible in parallel and selectable independent of a

second group of memory entries in the memory device that is accessible in parallel".

The specification does not disclose how a memory device is partitioned to produce the

groups recited in claim 1.

6.   **Claims 2-7** do not cure the deficiency of claim 1, and are rejected due to their dependence on claim 1.

7.   **Claim 8** recites the limitation *"partition a memory device to produce a first group of memory entries being accessible in parallel and selectable independent of a second group of memory entries in the memory device that is accessible in parallel"*. The specification does not disclose how a computer program product operates to partition a memory device as claimed.

8.   **Claims 9-14** do not cure the deficiency of claim 8, and are rejected due to their dependence on claim 8.

9.   **Claim 15** recites the limitation "*a process to partition a memory device to produce a first group of memory entries being accessible in parallel and selectable independent of a second group of memory entries in the memory device that is accessible in parallel*". The specification does not disclose how to make and/or use a content addressable memory manager comprising a process to partition a memory device as claimed.

10.   **Claims 16-17** do not cure the deficiency of claim 15, and are rejected due to their dependence on claim 15.

11.   **Claim 18** recites the limitation "*a memory device capable of being partitioned to produce a first group of memory entries that is accessible in parallel and selectable independent of a second group of memory entries in the memory device that is accessible in parallel*". The specification does not disclose a memory device capable of being partitioned as claimed.

12.   **Claims 19-20** do not cure the deficiency of claim 19, and are rejected due to their

dependence on claim 19.

13.   **Claim 21** recites the limitation *"And a memory device capable of being*

partitioned to produce a first group of memory entries that is accessible in parallel and

selectable independent of a second group of memory entries in the memory device that

is accessible in parallel". The specification does not disclose a memory device capable

of being partitioned as claimed.

14.   **Claims 22-23** do not cure the deficiency of claim 21, and are rejected due to their

dependence on claim 21.

15.   **Claim 24** recites the limitation *"a first group of memory entries being accessible*

in parallel and selectable independent of a second group of memory entries in the CAM

that is accessible in parallel". The specification does not disclose in such a way to

enable one skilled in the art to make or use a content addressable memory as claimed.

16.   **Claims 25-26** do not cure the deficiency of claim 24, and are rejected due to their

dependence on claim 24.

17.   Page 8 lines 7-9 of the specification states *"CAM 54 allows the entries to be*

accessed in parallel so that all or some of the entries can be checked during the same

time period". This does not teach or suggest the limitations of claims 1, 8, 15, 18, 21, or

24 cited *supra*. This behavior is known to one of ordinary skill in the art. In a CAM, all

of the data entries are compared to a data item submitted to the CAM to determine if the

CAM holds a matching data item. It is not known to one of ordinary skill in the art how a

CAM can be partitioned such that a first group of memory entries is selectable

independent of a second group of memory entries. In a typical CAM, all entries are compared to the submitted data item. It is not known to one of ordinary skill in the art how a CAM can be partitioned such that one group is selectable in parallel independent of a second group, and such partitioning is not disclosed in the specification of the instant application.

18.   Page 9 line 18 to page 10 of the specification states:

a.   "*Each of the entries in CAM 54 is configurable by a CAM manager 58 that is implemented as microcode in the control store 50 and, which is executed by the packet engine 48. <u>The CAM manager 58 partitions the CAM into a particular number of entries. The CAM manager 58 is capable of partitioning individual entries into two or more subentries that are individually selectable for use in parallel comparisons</u>. By producing subentries, particular ones of the subentries are grouped for storing one type of data (e.g. MAC addresses) and selected for use in comparing the data in parallel. Other subentries in the same CAM entries are grouped for storing and comparing another type of data (e.g., IP addresses). <u>Thus, CAM 54 is configured by CAM manager 58 for storing two or more types of data in subentries that are individually selectable for use in parallel comparisons</u>. By configuring CAM 54 for storing and comparing different types of data, the CAM 54 does not need to be loaded at separate instances with different types of data (e.g. MAC addresses, IP addresses) to perform parallel comparisons with different data types. By reducing the number of instances that CAM entries are*

loaded, clock cycles are conserved that can be used to execute other operations

in packet engine 48 and the network processor 28".

19.   This section of the specification states, in the first underlined portion, that the

CAM manager partitions the CAM, and is capable of partitioning individual entries into

subentries. It continues to recite a benefit of producing CAM subentries. In the second

underlines portion, the specification states again that the CAM is configured by the CAM

manager for storing data in subentries that are individually selectable for use in parallel

comparisons. The section finishes by reciting two more benefits of such a configuration

for a CAM.

20.   This section of the specification, therefore, contains no explanation of <u>how</u> the

CAM manager partitions the CAM to enable the entries to be accessible in parallel and

selected independently of another group of entries. Accordingly, this section of the

specification does not disclose in such a way as to enable one skilled in the art to which

it pertains, or with which it is most nearly connected, to make and/or use the invention of

claims 1-26.

21.   Page 10 line 16 to page 11 line 6 states in part *"Referring to FIG. 4, CAM 60*

represents CAM 54 configured by CAM manager 58 so that each CAM entry (e.g., entry

0 – entry 15) includes two subentries that store two different types of data". This section

continues to explain what sets of subentries represent in a specific example. Although

reciting that the CAM is configured by the CAM manager so that each CAM entry

includes two subentries, it provides no explanation of <u>how</u> this is done in such a way as

to enable one skilled in the art to which it pertains, or with which it is most nearly

connected, to make and/or use the invention of claims 1-26.

22.   Page 12 lines 5-8 states *"Along with partitioning CAM 60 into sixteen entries that

include two sub-entries, CAM manager 58 can configure the CAM to include more or

less entries and subentries."* Again, this section of the specification does not explain

how the partitioning is performed.

23.   Page 12 lines 9-12 states *"Referring to FIG. 5, CAM 70 represents CAM

manager 58 partitioning CAM 54 so that each entry includes "n" subentries that are

selectable for parallel comparisons with data, for example, retrieved from a received

packet."* This paragraph continues with an explanation of what the entries and

subentries represent, and concludes on page 13 lines 1-3 with *"the CAM manager is

capable of partitioning the individual subentries included in a CAM entry."* There is no

disclosure of <u>how</u> the CAM manager is capable of partitioning the subentries of a CAM

entry.

24.   Page 13 lines 4-7 states *"Referring to FIG. 6, similar to CAM 60 (shown in FIG.

4) and CAM 70 (shown in FIG. 5), CAM 80 represents CAM manager 58 partitioning

CAM 54 to include sixteen entries (e.g., entry 0 – entry 15)."* Again, this section does

not explain <u>how</u> the CAM manager partitions the CAM, it merely recites that it is done.

25.   Page 13 lines 23-24 states *"Referring to FIG. 7, CAM 90 represents CAM

manager 58 partitioning CAM 54 so that each entry includes one subentry."* This

section does not explain <u>how</u> the CAM manager partitions the CAM, it merely recites

that it is done.

26.   Page 14 lines 20-23 states "*Referring to FIG. 8, a portion of a CAM manager 110, such as CAM manager 58 stored in control store 50 and executed in the packet engine 48 partitions 112 a CAM into a particular number of entries.*" Although this section states that the packet engine partitions a CAM, it does not explain how the packet engine partitions a CAM, i.e. the steps taken to partition the CAM.

27.   Page 15 line 20 through page 17 line 7 explain how the CAM stores and performs match detection, but does not explain how the packet engine partitions a CAM, i.e. the steps taken to partition the CAM.

28.   Figures 3, 4, 5, 6, and 7 show CAMs having multiple entries, but do not show the entries partitioned into groups. Further, they do not show how a CAM would be partitioned into groups as claimed.

29.   Figure 8 shows a flowchart having two steps, partitioning a CAM into entries and partitioning each CAM entry into subentries. Figure 8 does not show a step of partitioning a memory device to produce two groups of entries.

30.   Further, page 11 line 19 through page 12 line 1 states "*By allowing CAM 54 to load different data types (e.g., MAC addresses, IP addresses) into each CAM entry and to select which data type to use to determine a potential match, the CAM can be loaded during one time period with two or more different data types compared to loading the CAM multiple times with different data types for separate parallel comparisons **in an un-configurable CAM**.*" Accordingly, the Examiner has reason to believe that in order for one of ordinary skill in the art to make or use the disclosed invention, a special,

configurable CAM is necessary. The specification does not enable one of ordinary skill

in the art to make or use this configurable CAM, as there is no discussion of how a

configurable CAM differs from an un-configurable CAM, or an explanation of what

makes a CAM configurable.

31.   **Claims 1-26** rejected under 35 U.S.C. 112, first paragraph, as failing to comply

with the written description requirement. The claim(s) contains subject matter which

was not described in the specification in such a way as to reasonably convey to one

skilled in the relevant art that the inventor(s), at the time the application was filed, had

possession of the claimed invention. As presented *supra* with respect to the lack of

enablement of claims 1-26, the specification does not provide an explanation of how the

claimed invention works. Accordingly, it is not clear to one of ordinary skill in the art that

Applicant had possession of the claimed invention at the time of filing.

Claim Rejections - 35 USC § 101

32.   35 U.S.C. 101 reads as follows:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of
> matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the
> conditions and requirements of this title.

33.   **Claims 1-26** are rejected under 35 U.S.C. 101 because the disclosed invention is

inoperative and therefore lacks utility. As stated in the specification at page 11 line 19

through page 12 line 1, an un-configurable CAM is not capable of performing the

claimed functions. As there is no disclosure of a configurable CAM, the disclosed

invention is inoperative and therefore lacks utility.

34.   **Claims 1-7** are rejected under 35 U.S.C. 101 because the claimed method steps are too preliminary to provide a useful, concrete, and tangible result to one of ordinary skill in the art.

35.   **Claims 8-14** are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter. Claims 8-14 are directed to "*a computer program product, tangibly embodied in an information carrier*". This limitation does not limit said claims to statutory subject matter, as an information carrier tangibly embodying the computer program product may be a printout of computer code or the like. The claimed computer program product must be directed to an embodiment in a computer readable medium.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jared I. Rutz whose telephone number is (571) 272-5535. The examiner can normally be reached on M-F 8:00 AM - 4:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Donald Sparks can be reached on (571) 272-4201. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the

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published applications may be obtained from either Private PAIR or Public PAIR.

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USPTO Customer Service Representative or access to the automated information

system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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jir

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